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INFLUENCE OF SPECIAL PROGRAMS ON THE DEVELOPMENT OF MENTAL AGE AND READING.

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DESCRIPTORS- *RETARDED READERS, *READING DEVELOPMENT, READING PROGRAMS, NEUROLOGICALLY HANDICAPPED, *TEACHING METHODS, *PROGRAM EVALUATION, *RETARDED CHILDREN, CHICAGO, ILLINOIS, VANCOUVER, CANADA, DELACATO'S NEUROLOGICAL ORGANIZATIONAL THEORY

THE PURPOSE OF THIS STUDY WAS TO MEASURE THE EFFECTS ON THE INTELLECTUAL, MATHEMATICAL, AND READING DEVELOPMENT OF RETARDED READERS RESULTING FROM TWO PROGRAMS--(1) A PROGRAM BASED ON DELACATO'S NEUROLOGICAL THEORY THAT AN INDIVIDUAL'S PERFORMANCE ABILITIES (SUCH AS READING) ARE FUNCTIONALLY RELATED TO HIS ANATOMICAL PROGRESS, AND (2) A NONSPECIFIC PROGRAM INTENDED TO INDUCE THE HAWTHORNE EFFECT. THREE GROUPS, OF APPROXIMATELY 50 CHILDREN EACH, PARTICIPATED IN THE STUDY. IN ADDITION TO THEIR REGULAR READING, MEMBERS OF THE EXPERIMENTAL GROUP WERE GIVEN SPECIAL ACTIVITIES INTENDED TO ENHANCE NEUROLOGICAL ORGANIZATION AND CONSEQUENTLY TO ELIMINATE READING DIFFICULTIES. A PROGRAM OF VARIED ACTIVITIES WAS ADDED TO THE READING PROGRAM OF THE SECOND GROUP, WHILE THE CONTROL GROUP CONTINUED THE REGULAR READING PROGRAM. RESULTS OF THE STUDY DID NOT SUPPORT THE CONTENTION THAT THE ADDITION OF ACTIVITIES INTENDED TO PROMOTE NEUROLOGICAL DEVELOPMENT WOULD ENHANCE READING DEVELOPMENT, AND DID NOT SUPPORT THE CONTENTION THAT READING CAN BE USED AS A CLINICAL INDEX OF THE QUALITY OF NEUROLOGICAL ORGANIZATION, WHICH WAS MEASURED IN THIS STUDY BY CREEPING AND LATERALITY. IN ADDITION, NO EVIDENCE OF OPERATION OF THE HAWTHORNE EFFECT WAS FOUND. NEITHER THE EXPERIMENTAL PROGRAM NOR THE NONSPECIFIC PROGRAM PRODUCED ANY IMPROVEMENT IN READING, MATHEMATICS OR INTELLIGENCE. (AL)

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INFLUENCE OF SPECIAL PROGRAMS ON THE DEVELOPMENT OF MENTAL AGE AND READING

Cooperative Research Project No. S-349

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CHAPTER I

INTRODUCTION

The object of this study was 1) to investigate the influence of a program based on a theory of neurological organization (Delacato, 1959; 1963) and a non-specific program on the intellectual and reading development of retarded readers, and 2) to test certain relationships deduced from the theory.

The introduction provides a background for the study through the following sequence: first, by summarizing the central concepts of the theory; second, by delineating the problem under study through specifying the hypotheses to be tested; third, by defining key terms used throughout the investigation; and fourth, by discussing the overall organization of the report.

The study was primarily concerned with testing hypotheses derived from the rationale, rather than treating the theoretical issues affecting such diverse fields as neurology, reading, anatomy, and language.

The Theory of Neurological Organization

After a brief background, including the history and a summary of the theory, this section presents several key conceptualizations of the rationale. These concepts are elaborated through direct quotations from Delacato's writings.

Background

About twenty years ago, an interdisciplinary team under the direction of Temple Fay, a Philadelphia neurosurgeon, began to concern itself with the treatment of brain-injured children. One result of the collaboration was the establishment of the Institutes for the Achievement of Human Potential in Philadelphia. Results of the work of the group with non-surgical techniques have been reported in a professional journal (Doman, Spitz, Zucman, Delacato, & Doman, 1960) and in mass circulation magazines (Brossard, 1962; Clark, 1964; Ernst, 1962; Time, 1963).

Carl Delacato (1959; 1963), a member of the team, devised a neuro-psychological rationale for the diagnosis and treatment of language disorders. Through reference to a series of behavioral tasks, the diagnosis purports to measure the development of the central nervous system at four

continuous levels: medulla and cord, pons, mid-brain, and cortex (the latter is viewed as responsible for hemispheric dominance). The treatment program consists of a series of tasks which can be carried out at home or in school and which vary with the diagnosis.

Central Concepts

The central concepts of the theory have revolved around the idea of neurological organization. The idea assumes that ontogeny, the process of individual development, recapitulates phylogeny, the process of species development, and that the development proceeds in an orderly way, anatomically, in the central nervous system, progressing through the medulla and cord, pons, mid-brain, and cortex, and culminating in hemispheric dominance. According to the rationale, the individual's development with respect to mobility, vision, audition, and language parallels, and is functionally related to, his anatomical progress.

Delacato (1963) has reasoned that differences in language facility, ranging from the inability to speak (aphasia) to success in reading, are a function of neurological organization. By measuring the level of neurological organization, according to described techniques (Delacato, 1963), it becomes theoretically possible to prescribe activities aimed at enhancing this neurological organization and, consequently, to prevent or eliminate language disorders.

The concept of neurological organization has been stated as follows (Delacato 1959, Pp. 19-22)

> Neurological organization is that physiologically optimum condition which exists uniquely and most completely in man and is the result of a total and uninterrupted ontogenetic neural development. This development recapitulates the phylogenetic neural development of man and begins during the first trimester of gestation and ends at about six and one half years of age in normal humans. This orderly development in humans progresses <u>vertically</u> through the spinal cord and all other areas of the central nervous system up to the level of the cortex, as it does with all mammals. Man's final and unique developmental progression takes place at the level of the cortex and it is <u>lateral</u> (from left to right or from right to left).
>
> This progression is an <u>interdependent continuum</u>, hence if a high level of development is unfunctioning or incomplete, such as in sleep or as the result of trauma, lower levels become operative and dominant (mid-brain sleep and high cervical pathological reflexes). If a lower level

is incomplete all succeeding higher levels are affected both in relation to their height in the central nervous system and in relation to the chronology of their development. Man's only contribution to this organizational schema is that he has added to the vertical progression, the final lateral progression at the level of the cortex. Here again, at the cortical level, the same premises apply. The final progression must become dominant and must supersede all others. Prerequisite, however, to such dominance is the adequate development of all lower levels. In totally developed man the left or the right cortical hemisphere must become dominant, with lower prerequisite requirements met, if his organization is to be complete.

Phylogenetics is the study of the evolution of man. Phylogenetically the nervous system has evolved from a very simple to a very complex mechanism. As evolution progressed, animals achieved what could be compared to a spinal cord. These animals operated chiefly at a reflex level. As time went on in the evolutionary cycle, the mid-brain was developed, and finally there evolved animals which operated slightly under the level of man, who has a cortex. Through the evolutionary cycle man has developed a cortex, yet vestigally he retains the lower level neurological appendages and functions which were needed during this developmental cycle. If the animals which operate slightly under the level of man are analyzed, they are found to have a cortex. Generally they have the neuro-anatomical structure of man but these animals cannot do the following things: stand fully upright, see three dimensionally, oppose the thumb and forefinger, supinate and pronate the hand, speak or write a language and, operate unilaterally with the hand, foot and eye of one side of the body.

The neurological differences between man and slightly lower forms of animals are not cellularly important. The basic difference between man and the animal world is that man has achieved cortical dominance wherein one side of the cortex controls the skills in which man out-distances lower forms of animals. This whole phylogenetic process is recapitulated ontogenetically with each human being. In the event that there is some obstruction to this ontogenetic recapitulation, communication and language dysfunctions occur.

Man has evolved to the point that the two hemispheres of the brain, although they mirror each other physically, have differentiated functions. Right handed humans are one sided, i.e., they are right eyed, right footed and right handed, with the left cortical hemisphere controlling the organism.

Trauma of the controlling cortical hemisphere results in loss of language skills, but equally important, trauma of the subdominant area results in loss of tonal factors. Left hemiplegics (right handed people who have suffered a cerebrovascular accident to the right or subdominant hemisphere of the cortex) have no difficulty with speech but suffer a very significant loss in tonal memory, tonal appreciation and the ability to carry a tune. Generally, their melody, rhythm and accent abilities are affected.

Some investigators feel that man's supremacy is not the result of cellular acquisitions within the cortex but is instead the result of the specialization of function which man has evolved in the use of his cortex. They feel that as man evolved into an ideating and communicating human being, he simultaneously developed cortical laterality. (Italics in original)

This original statement of neurological organization has been further amplified as follows (Delacato 1963, p. 7):

> The basic premise of the neuro-psychological approach as outlined by the author is that if man does not follow this schema he exhibits a problem of mobility or communication. To overcome such problems one evaluates the subject via the neurological schema outlined above. Those areas of neurological organization which have not been completed or are absent are overcome by <u>passively imposing</u> them upon the nervous system in those with problems of mobility and are <u>taught</u> to those with problems of speech or reading. When the neurological organization is complete the problem is overcome.
>
> Since speech and reading are uniquely human, we have focalized upon them in our efforts to educate our children. Speech and reading are the final <u>human</u> result of neurological organization and hence are clinical indices of the nature and the quality of neurological organization of an individual. (Italics in original)

The two preceding quotations provide the conceptual basis for the theory.

Background and Justification for the Problem

An extensive amount of favorable publicity has appeared in the popular media concerning the "amazing improvements in reading" associated with the program (Beck, 1964; Brossard, 1962; Clark, 1964; Ernst, 1962; Time, 1963). The problem of this study was to test empirically the validity of these claims.

The study examined the relationship between two indices of neurological organization (creeping and laterality) and reading of children enrolled in a special summer program for retarded readers. The study was also concerned with differences in reading, mathematics, and intelligence that might be associated with the addition of an activities program consistent with the theory of neurological organization to the standard summer reading program of the children.

In order to control for possible changes in reading which might be due to the fact that research was conducted, the Hawthorne or experimental effect, a non-specific program was designed and added to the curriculum of a second experimental group. In other words, an attempt was made to assess changes in the subjects' reading scores that could be explained by the fact that experimental conditions were introduced (the Hawthorne effect) as well as the extent to which such changes could be attributed to the specific tasks prescribed by the experimental program.

The study has potential importance in at least two respects: 1) the design of the research and 2) the testing of the theory of neurological organization.

The Hawthorne effect, now receiving much attention in the literature (Cook, 1962; Cook, McLean, & Coon, 1964; McDonald, 1964), is a phenomenon that has caused knowledgeable consumers of educational research to doubt the results of "controlled" studies which have not allowed for it. The design of this study, in setting up a non-specific group in addition to the traditional control and experimental groups, offered a possible method for controlling for the Hawthorne effect, a method patterned after placebo research in medicine (McDonald, 1963).

In addition, the findings of the present study should have significance to teachers, administrators, and reading specialists who are presently assessing the rationale without benefit of findings from controlled empirical studies. If it is shown that the experimental program has a positive effect on the achievement of the students, clear implications will follow for curriculum decisions with retarded readers.

The study is also significant in that it enters into an area--the relationship of mixed cerebral dominance and aca-

demic attainment--which needs more research toward the resolution of conflicting evidence (Balow & Balow, 1964; Gates, 1947; Harris, 1956; Money, 1962; Orton, 1937).

Hypotheses

The purpose of this section is to further delineate the problem by specifying hypotheses deduced from the theory. The hypotheses were all stated in the null form so that the failure to support any of the first three would correspond with expectations based on the rationale. The last two were added to test effects of the Delacato program on mathematical and intellectual development.

The first series of hypotheses, based on normative data, compares reading achievement with two purported indicators of neurological organization: creeping and laterality. If, as proposed (Delacato, 1963) neurological organization can be measured in part by these indices, and if reading is a function of neurological organization, then the indices should predict reading. Rejection of the following null hypotheses would amount to support for the theory:

1. Reading is not related to creeping.
2. Reading is not related to laterality.

The second set of hypotheses, relevant to data resulting from the experimental aspect of the study, compared post-test scores among the three groups used in the study.

If the theory is correct, an activity program designed in terms of the theory and added to the regular curriculum should result in improved reading ability when the subjects affected are compared with students 1) who have acted as a traditional control or 2) who have been exposed to a non-specific program which contradicts in several aspects the theory's rationale. If the Hawthorne effect operates one would expect both the experimental and the non-specific groups to have higher mean scores in reading, mathematics, and intelligence than the control group. The following hypothesis was used to test this set of deductions:

3. Reading improvement is not related to exposure to the experimental program.

In order to test the effect that the experimental program might have on the development of other factors such as intelligence and arithmetic, the following hypotheses were formulated:

4. Mathematical improvement is not related to exposure to the experimental program.

5. Intellectual attainment is not related to exposure to

the experimental program.

Definition of Terms

Certain terms used in this paper are defined on the basis of scores received on particular test instruments. These terms are clarified in Chapter III and include the following: arithmetic, creeping, intelligence, laterality and reading.

Other terms, used throughout this paper with highly specific meanings, are defined as follows:

Color Filtration

In the following color filtration activities, a red colored translucent plastic lens was placed over the non-dominant eye (Delacato, 1963, p. 128).

Writing.--During writing activities a red pencil was used. The red lens over the non-dominant eye filtered out the image so only the dominant eye could detect what was being written.

Reading.--With the red lens in place, green cellophane was placed over the book. This combination caused the image to be filtered out by the red lens, and hence only the dominant eye was able to detect the printed material.

Control Group

This group took the pre- and post-tests but its usual curriculum was not otherwise altered.

Creeping

The child moved forward on his hands and knees, with his stomach off of the floor, in the quadruped position (Delacato, 1963, Pp. 53-54, 109-111).

Cross-pattern Creeping.--In this form of creeping the right leg and left hand moved forward at the same time. The head and neck turned toward the left hand. On the next step the left leg and right hand moved forward, and the head and neck turned toward the right hand (Illustrated in Appendix A).

Cross-pattern Walking

An exaggeration of the normal walking gait, this activity required the child to point to his forward foot with the opposite hand. His body turned toward the forward foot, and his eyes gazed at the forward hand (Delacato, 1963, Pp. 58, 88;

Illustrated in Appendix A).

Experimental Group

This group was exposed to a series of activities, including color filtration activities, creeping, etc., which were advocated in Delacato's (1959; 1963) writings. The program was integrated in an orderly fashion with the regular summer school curriculum; appropriate parts of the program, such as use of the sleep position and curtailment of music, were carried out at home. Details of this program are further elaborated in Chapter III.

Neurological Organization

This is the central concept of the theory. It is explained earlier in this chapter.

Non-specific Color Filtration

Designed to parallel the color filtration activity, the children in the non-specific group were required to wear glasses covered with green cellophane. The green lenses did not have a dominant eye filtration effect during reading or writing activities.

Non-specific Group

The non-specific program was designed to match the experimental program in activities differing from that program and not correlated with achievement, in terms of any theory of learning known to this investigator, but requiring similar effort and time. Wherever possible, an activity diametrically opposed to the theory's rationale was used. For example, the activities of the experimental group de-emphasized music, a de-emphasis which is a central aspect of Delacato's (1963, p. 123) prescription to enhance the development of cerebral dominance, while in the non-specific group music was emphasized. The non-specific program, like the experimental program, was integrated into the ongoing curricular activities of the summer reading program, and appropriate parts were carried out at home. Details of the program are further described in Chapter III.

Non-specific Pattern

To parallel the sleep positions of the experimental group, a comparable position was formulated for the non-specific group. The child lay on the floor at rest on his back with his legs extended and his arms resting on his stomach

(Illustrated in Appendix A).

Sidedness Activities

General encouragement, both at home and at school, was given to the child to use his dominant eye, hand and leg (Delacato, 1963, Pp. 124-126).

Sleep Position

A given arm and ipsilateral leg were flexed, while maintaining contact with the floor, and the opposite arm and leg were extended, the head meanwhile facing the flexed arm. There were two forms of the sleep position (Delacato, 1963, Pp. 50-51):

Left Sleep Position.--The child lay in the pattern with his head facing his flexed right arm (Delacato, 1959, p. 40; Illustrated in Appendix A).

Right Sleep Position.--While in the pattern the child's face was pointed toward his left arm, which was flexed (Delacato, 1959, p. 41; Illustrated in Appendix A).

Organization of this Report

The foregoing introduction provides an orientation to the rationale and delineates the problem under investigation.

Chapter II is a brief review of the literature and related research, focusing on Delacato's writings, analysis of the theory, and a summary.

The research design, sequence of events, instrumentation, and description of the sample are treated in Chapter III.

Chapter IV presents an analysis of the data and the findings for each of the five null hypotheses. The chapter concludes with the limitations of the study.

The final summary, conclusions, and implications are presented in Chapter V.

The Appendixes, containing communications and the data gathering sheets, are followed by the references cited in the study.

CHAPTER II

RELATED RESEARCH AND REVIEW OF THE LITERATURE

The purpose of this chapter is to present a summary of the literature concerning Delacato's writings, with particular attention to two of the more controversial aspects of the theory of neurological organization.

Delacato's Writings

Delacato's earlier writings (Delacato, 1952, 1955; Delacato & Delacato, 1952; 1953) in the fields of reading and spelling exhibited a Freudian bias in treating and understanding language and reading disorders. These were followed by a series of articles (Delacato & Doman, 1956; Delacato & Flores, 1956) concerned with the rehabilitation problems of brain-injured patients.

In his first book Delacato (1959) outlined his theory of neurological organization. Here he postulated the importance of brain dominance to reading. He presented his ideas concerning the importance of the tonic neck reflex in terms of a special sleep position which purportedly assisted lateral development, and relationships between handedness, eyedness, and musical activities, and the development of brain dominance.

Delacato's second book (Delacato, 1963) elaborated on his theory of neurological organization and argued the importance of creeping and stylized walking activities for the development of dominance and the prevention of language disorders. This work also emphasized benefits to be achieved through use of the Stereo-Reader (Delacato, 1961) and a prescribed writing position.

Both books presented case studies to support the theory and the effectiveness of the Delacato methods of treatment with children suffering from language disorders.

Analyses of the Theory of Neurological Organization

A review of the literature and direct correspondence with Delacato failed to uncover published reports of research, conducted by generally accepted procedures, which related to hypotheses deduced from Delacato's theory of neurological organization. However, a pilot study failed to confirm the theory (Robbins, 1965).

Presentations in the popular media (Beck, 1964; Delay,

1963; Ernst, 1962; Maisel, 1964; Time, 1963) have generally been favorable, but at least one popular journal has been highly critical (Clark, 1964). In general, professional critics have not been laudatory. The theory has been seen by Money (1962) as a passing fad. Brown (1964) concluded that Delacato's own writings provided an excursion into science fiction.

At the 1964 Claremont Reading Conference a symposium (Perkins, Oettinger & Hudspeth, 1964) was held to discuss the theory of neurological organization as presented by Delacato (1963) at the previous year's conference. This group attacked the theory on a number of points. They claimed that the fields of reading, neurology, child development, and ethology failed to support many of Delacato's ideas and assertions.

The Claremont group expressed concern that the theory failed to take motivation into consideration, neglected to treat the relation of perception and abstract concept formation, was presented as a panacea for all poor readers, and used over-simplified complex case material as evidence.

Oettinger, one member of the Claremont symposium, while crediting Delacato with serving as a necessary catalyst, concluded, "Delacato's data on which his theories are based are fallacious, his rationale poor, and his conclusions untenable." (Perkins et al., 1964, p. 125.)

Two of the most controversial aspects of the rationale are 1) the emphasis on cortical hemispheric dominance in diagnosis and 2) the emphasis on mobility, particularly creeping, in treatment. Some of the issues involved in this controversy are discussed in the remainder of this section.

The relation of mixed cerebral dominance, as measured in functional attainments, to intellectual levels in the symbolic language areas has been emphasized (Delacato, 1959; 1963; Harris, 1956; 1957; 1958; Orton, 1937) and minimized (Gates, 1947; Money, 1962). Summary statements of the literature indicate that the evidence is equivocal and depends on the bias of the investigator (Johnson, 1957; Smith & Carrigan, 1959).

It has been demonstrated that each of the two cortical hemispheres has its separate mechanisms for intellectual, emotional, and other functions, and that one hemisphere takes over in the case of conflict (Mishler, 1964). There appears to be a relationship between language development and dominance (Dreifus, 1963; Zangwill, 1962). The severing of the corpus callosum (transverse fibers which connect the cerebral hemispheres) in both man and animals has resulted in two relatively independently functioning brains (Sperry, 1964). Only subtle testing is able to distinguish between normal individuals and those who have been subjected to this

surgical procedure (Mishler, 1964). Therefore, even if hemispheric dominance exerts an influence on language development, inadequate measuring techniques could explain the confusion in the literature. The association of hemispheric dominance with reading disability appears statistically significant among younger children and less so among older children and adults (Harris, 1957; Zangwill, 1962).

The second controversial aspect of the approach concerns requiring children to spend time creeping in order to enhance the development of neurological organization. However, ideas concerning the influence of a well-functioning muscular system on intellectual development are not new. Sequin (Holman, 1914) felt that the development of mind depended on and was determined by the body. More recently, Jersild (Kephart, 1960) expressed the idea that childhood mental and physical activities were related and that intellectual development arose in large part from motor activities.

Kephart has developed a treatment rationale based in part on motoric development. He believes that motoric progress influences the development of laterality, directionality, eye control and body image (Kephart, 1960; 1963). All of these are considered important in developing the intellect. It may be that creeping is a way to develop body concept, balance, serialized motor development, eye-hand coordination, etc. Baldwin (1895) considered inter-sensory development, in terms of perceptual, motor, visual kinesthetic ability, etc., as being based upon the development of proper motor control. A similar but later view has also been expressed (Birch, 1963). While the theoretical justification for the approach may not be confirmed, the literature provides at least a tentative and plausible basis for justifying the treatment program.

This investigator came to the conclusion that the existing literature did not present a clear cut confirmation or rejection of the rationale. Therefore, it seemed possible that empirical testing of the approach might provide the basis upon which it could be evaluated.

Summary

A review of the literature indicated that while the popular media have generally been favorable toward the theory of neurological organization, writers from the professions of medicine, psychology, and reading have not shared this enthusiasm. The literature also revealed a lack of published empirical studies testing hypotheses deduced from the theory.

CHAPTER III

PROCEDURES

It is the purpose of this chapter to describe the design and methodology of the study. The present chapter has the following organization: 1) a discussion of the research design and sequence of events, 2) a consideration of the test instruments used to evaluate the subjects, and 3) a description of the subjects used in the study.

The Research Design and Sequence of Events

The idea for the study was first conceived in March, 1964. The Chicago Roman Catholic Archdiocesan School Board was approached for permission to conduct the study in a summer school reading program for retarded readers in the diocese. Approval was received from Reverend William O. Goedert, Assistant Superintendent, and Sister M. Edwin, Director of the Reading Program.

Selection of the Sample

The summer school participating in the study was suggested by Sister M. Edwin. The final decision to participate in the study was left with the school's principal.

The principal and teachers at the school were informed that the research was of the nature of an experimental study supervised by members of the faculty of the Department of Education at the University of Chicago, financed by the Cooperative Research Program of the Office of Education, U.S. Department of Health, Education, and Welfare, and that the study had the approval of the Catholic School Board. The study was explained as an inquiry into the effect of various sensory-motor activities on the development of reading ability.

Approximately 250 students from several nearby schools attended the summer reading program. Two sessions were taught each morning. The first session met from 9:00 a.m. to 10:15; the second from 10:45 to 12:00 noon. Twelve regular Archdiocesan teachers, who had received help in working with retarded readers, each taught two sessions each day. Class size ranged from six to thirteen pupils. The class assignments were made on the basis of reading level and age. The research study did not interfere or affect the assignment of either the students or teachers to the various classes.

Eight of the classes from each session were chosen as

follows: the twelve classes at each session were assigned a number from a table of random numbers (Wallis & Roberts, 1956, Pp. 631-635). The classes assigned the lowest eight numbers in each session participated in the study.

After the classes had been chosen, each child within the selected classes was assigned a random number. The children were ranked from low to high. When the ranking was completed for a class, the children were assigned to one of the three groups in the following order: the first child was assigned to the experimental group; the second child was assigned to the non-specific group; and the third child was assigned to the control group. The fourth child was assigned to the experimental group and so on until each child in the class had been assigned. The assigning in this way continued through each of the eight classes (in order of their random numbers) of both sections. For example, if the last child in the first class was assigned the experimental group then the first child of the next class went into the non-specific group. This procedure assured that class selection and student assignments to experimental, non-specific, and control groups were done by random techniques.

By assigning students from each class to the three groups the differential effect that the teacher might have on reading development of her own students was equivalent among all three groups, subject to sampling error. In addition any unusual occurances in any of the classes would affect students in each of the three groups.

Pre-Testing

Pre-testing began on the second class day. The tests, described later in the chapter, measured each child in creeping and laterality. The tests were administered to all the children participating in the study over a two day period. A few subjects who were absent on the test days could not be re-tested and were eliminated from the study. (See Table 1.)

The Experimental and Non-specific Programs

The experimental and non-specific programs were conducted from Saturday, June 26, 1965 through the month of July, 1965. The children participated in the program on a daily basis with the addition of two Saturday classes. On June 25, 1965 a letter (Illustrated in Appendix A) was sent home to children participating in the experimental and non-specific groups. The letters were similar except that the letter going to the experimental group requested that the children bring some type of knee pads with them to school.

During the half hour period between the two teaching

TABLE 1

Pre-test Data

Laterality

	Lateralized Left	Lateralized Right	Non-Lateralized	Total Sample
Eyedness	26	37	86	149
Handedness	7	135	7	149
Footedness	13	136	0	149
Summary	0	33	116	149

Creeping

Type	Number
Good	59
Fair	71
Poor	19
Total	149

sessions (10:15-10:45) the experimental group's program consisted of five minutes devoted to the appropriate sleep position (see definitions of terms in Chapter I), fifteen minutes devoted to cross-pattern creeping, and ten minutes devoted to cross-pattern walking. During the children's regular class period they used the color filtration procedures for reading and writing activities. On July 2nd a letter (Illustrated in Appendix A) was sent home to the parents encouraging them to allow the child to creep for two fifteen-minute periods daily, engage in cross-pattern walking for two fifteen-minute periods daily, eliminate musical activities, encourage the child to engage in sidedness activities, and to have the child lay in the appropriate sleep position upon going to bed and to have him placed in this position after he has fallen asleep. Appropriate instructions and illustrations accompanied the letter. There were separate letters for left-sided and right-sided children. In addition to the letter the parents were asked to complete a Daily Record Chart (Illustrated in Appendix A) which indicated if the program was being carried out at home. These charts were returned to school each Friday and new charts were passed out for the duration of the study.

During the half-hour period between classes the non-specific group spent five minutes in the non-specific sleep position and twenty-five minutes in miscellaneous musical activities including singing, games, and dances during their thirty-minute period. During their regular remedial reading class they engaged in the non-specific color filtration program for all reading and writing activities. On July 2, 1965 a letter (Illustrated in Appendix A) was sent home to the children of this group encouraging the family to increase the musical activities of the child, his participation in sports for at least two fifteen-minute periods daily, his spending at least fifteen minutes in quiet games, and his lying in the special sleep position upon retiring. The description of the activities were complete and there was an illustration of the non-specific sleep position. A Daily Record Chart (Illustrated in Appendix A) accompanied the letter, and the parents were instructed to indicate which activities were carried out and which ones were not carried out. As done in the experimental group, children returned these Daily Record Charts each Friday and received a fresh chart for the following week.

During the special half-hour period between classes the two groups were supervised as follows: the non-specific group received supervision from a Master's candidate at the University of Chicago who had just returned from the Peace Corps. He had exceptional skills in organizing musical activities for the children. He was assisted by several parents from the neighborhood who received compensation for their services. The experimental group was divided into two sections. Supervising the first section was a Master's student from the University of Chicago who received training from the principal

investigator in the Delacato technique. The second section was supervised by a teacher from the Archdiocese of Chicago who had participated in an earlier study (Robbins, 1965) involving the Delacato technique conducted by the principal investigator. They were also assisted by parents from the community who received compensation for their services.

Teachers were instructed in how to conduct the color filtration and non-specific color filtration activities at a staff meeting. This was followed up by a memorandum on July 8th (Illustrated in Appendix A). The principal investigator supplied the special folders, glasses, pencils and cellophane sheets necessary for the visual activities. Each class was visited by the principal investigator to make sure that the children and the teacher understood the special program. The investigator did not find any difficulty in regards to the teacher handling the visual activities or any confusion with regard to a mix-up between the children in the non-specific or the experimental groups doing each others activities by mistake. During this entire period the control group did not participate in any of these activities.

With the exception of the visual tasks the normal Archdiocesan remedial reading program was conducted.

Post-tests

On July 26, 1965 letters (Illustrated in Appendix A) went out to the parents indicating that their children would be tested on July 29th and 30th and that they would be expected to be present from 9:00 a.m. to 12:00 noon instead of just their usual class period. All three groups were tested in reading, arithmetic, and intelligence. The children were divided into groups depending on the appropriate test level (See Table 2) and the tests were administered by their regular teachers with the addition of a proctor (a teacher not administering a test or one of the principal aids participating in the study).

Instrumentation

Standardized Tests

Standardized tests were administered and scored in accordance with the directions in their respective manuals in order to measure the performance of the subjects with respect to arithmetic, general intelligence, and reading.

General intelligence was measured by the OTIS Quick-Scoring mental abilities tests (Otis, 1936). The Alpha test was used for children whose reading ability was within grades I through IV and the Beta test was used for the children whose reading ability was between grades IV through IX.

TABLE 2

Test Levels and Student Distribution

	Instrument		Numbers by Group			
Grade Range	Stanford Achievement Test-Level	Otis I.Q. Test-Level	Total Sample	Experimental Group	Non-Specific Group	Control Group
1-2.5	Primary I	AS	9	2	3	4
2.6-3.9	Primary II	AS	50	20	15	15
4-5.5	Intermediate I	B	64	20	24	20
5.6-6.9	Intermediate II	B	12	4	4	4
7-8.9	Absent	B	14	5	5	4
	TOTAL		149	51	51	47

The children's reading ability was measured by the appropriate level of the Stanford Achievement Test (Kelley, Madden, Gardner, & Rudman, 1964). The appropriate test level was determined by the child's estimated reading ability and previous reading score from tests administered during the spring of 1965 in their regular school program.

Mathematical ability was measured by the Stanford Achievement Test (Kelley, Madden, Gardner & Rudman, 1964). The appropriate level of the arithmetic test was based on the child's reading score as determined by his spring 1965 test results.

Grade equivalency scores were used for statistical analysis of arithmetic and reading levels. The intelligence quotient was used in statistical treatment of the intelligence scores.

Non-standardized Tests

In order to measure the child's ability in creeping and laterality, special tests were employed in the study (Test sheets are illustrated in Appendix B).

Creeping.--Creeping was measured on a three-point scale. The examiner requested the child to creep across the room. If the child indicated a good coordinated cross-pattern style, he was rated good; if his creeping was slightly uncoordinated but still retained a cross-pattern style, it was rated fair; all other forms of creeping were rated poor.

Creeping was measured by two professional reading consultants of the Archdiocese. The two consultants had previous experience in measuring creeping and had spent time at the Philadelphia Institutes for the Achievement of Human Potential where Delacato is a director.

Laterality.--The laterality score represented a summary of a series of tests measuring eyedness, handedness and footedness. A child indicating a consistent preference to either the left or right side was considered lateralized. A child not indicating this type of consistent preference was considered non-lateralized.

Eye preference was determined by five individual tests. Each of the tests was individually scored to indicate whether the child preferred his left eye, right eye, or seemed to oscillate between both eyes.

The first test involved the child looking through a telescope. The second involved an 8½ x 11 inch cardboard with a hole in the center. The child was instructed to hold the card at arms length and to sight a distant object. The third test involved looking through a three inch tube which simulated a

microscope. The Kaleideoscope was used for the fourth measure of eyedness. The Keystone telebinocular, administered by a trained reading consultant, provided the fifth test.

The hand tests involved pantomiming four activities: brushing one's teeth, using a scissors, throwing a ball, and eating. In addition a fifth test was utilized wherein the child was asked to write his name. These tests were scored for left-handedness, right-handedness, or mixed if the child chose to use both hands in solving the task.

Foot preference was determined by asking the child to kick a bean bag on two occasions. He was then asked to kick the bag with his non-preferred foot. Both his choice and the quality of his kicking were taken into consideration in rating foot preference as either left, right, or mixed.

Background Information

The student transfer form was used to supply the following information concerning: (See Table 3)

Sex,
Age (in months as of July 1, 1965),
Previous grade (1964-65 school year),
Intelligence Quotient (most recent), and
Reading average (based on spring 1965 tests).

Description of the Sample

The sample consisted of 149 children randomly selected from the entire enrolment (approximately 250 children) in a summer reading program held by the Archdiocese of Chicago. Background information on the children (see Table No. 3) indicated that of the 149 children, 94 were male, 55 were female. The average age in months at July 1, 1965 was 136. The average grade level of the children was 5.0 while their spring reading score indicated an average reading ability of 4.4. The average I.Q. for the population was 98. One-way analyses of variance did not indicate any difference across the three groups in age, grade, I.Q., or pre-reading scores.

Pre-tests (Table No. 1) indicated that only 59 of the children showed good creeping, 71 creeped fair and 19 were poor creepers. Of the 149 children, only 33 were lateralized.

TABLE 3

Background and Pre-test Information

Background	Total Sample	Experimental Group	Non-Specific Group	Control Group	F Ratio	Statistically Significant?
Age (in months, July 1, 1965)	136	135	137	137	0.20	No
Grade (1964-1965 School year)	5.0	4.9	5.1	5.1	0.14	No
I.Q. (Pre-test - most recent)	98	97	99	97	0.73	No
Reading (Spring, 1965)	4.4	4.4	4.5	4.3	0.29	No
Number	149	51	51	47	Not tested	
Sex:						
Male	94	34	34	26	Not tested	
Female	55	17	17	21	Not tested	

CHAPTER IV

ANALYSES OF THE DATA, FINDINGS, AND LIMITATIONS

The purpose of this chapter is to present the hypotheses, data, findings and limitations of the study. Each of the five hypotheses was tested in the null form to determine whether associations among the variables could be explained by chance. A relationship was considered statistically significant if the probability (p) of the occurance was at least 0.05. (Note: The data were not tested for homogeneity nor for balance of design.)

The first two hypotheses utilized data based on the pre-test results. The final three hypotheses were based on post-test information. The results did not support the Delacato theory of neurological organization.

Hypothesis 1

Reading is not related to creeping.

Test

Mean differences in reading among the three groups of subjects--good, fair and poor creepers--were tested by a two-way analysis of variance.

There was no statistically significant difference in mean reading ability among the three groups nor as a result of the interaction between creeping and grade level (Table 4).

Finding

The null hypothesis could not be rejected.

Hypothesis 2

Reading is not related to laterality.

Test

Mean differences in reading between the two groups of subjects, lateralized and non-lateralized, were tested by a two-way analysis of variance.

There was no statistically significant difference in mean reading ability between the two groups nor as a result of the interaction between laterality and grade level (Table 5).

TABLE 4

Pre-test Reading Analyzed by Creeping and Grade

CREEPING

Grade	Good	(No.)	Fair	(No.)	Poor	(No.)		Total	(No.)
2	2.0	(4)	---	(0)	---	(0)		2.0	(4)
3	2.7	(9)	2.7	(12)	2.4	(2)	2	2.7	(23)
4	3.9	(10)	3.6	(17)	3.3	(5)		3.7	(32)
5	4.4	(16)	4.4	(17)	4.5	(4)		4.4	(37)
6	4.9	(9)	4.9	(11)	4.6	(1)		4.9	(21)
7	5.4	(5)	5.7	(8)	6.0	(5)		5.7	(18)
8	7.5	(6)	6.8	(6)	8.1	(2)		7.3	(14)
Total	4.4	(59)	4.3	(71)	4.7	(19)			

Analysis of Variance

Source	DF	Sum Sq.	Mean Sq.	F	Probability
Grade	6	0.26258E 05	0.43763E 04	58.42	$p < .01$
Creeping	2	0.25247E 03	0.12624E 03	1.69	$.25 > p > .10$
Interaction	10	0.25660E 03	0.25660E 02	0.34	$p > .25$
Error	130	0.97392E 04	0.74917E 02		
Total	148	0.36506E 05			

Note: The analysis was not tested for homogeneity of the data or balance of the design.

TABLE 5

Pre-test Reading Analyzed by Laterality and Grade

Grade	Lateral-ized	(No.)	Non-Lateral-ized	(No.)	Total	(No.)
2	2.1	(2)	1.8	(2)	2.0	(4)
3	2.3	(4)	2.7	(19)	2.6	(23)
4	3.3	(8)	3.8	(24)	3.6	(32)
5	4.6	(7)	4.3	(30)	4.4	(37)
6	5.0	(5)	4.9	(16)	4.9	(21)
7	5.2	(2)	5.7	(16)	5.7	(18)
8	7.3	(5)	7.3	(9)	7.3	(14)
Total	4.4	(33)	4.4	(116)		

Analysis of Variance

Source	DF	Sum Sq.	Mean Sq.	F	Probability
Grade	6	0.26258E 05	0.43763E 04	59.10	$p < .01$
Reading	1	0.31641E 01	0.31641E 01	0.04	$p > .25$
Interaction	6	0.24895E 03	0.41492E 02	0.56	$p > .25$
Error	135	0.99962E 04	0.74046E 02		
Total	148	0.36506E 05			

Note: The analysis was not tested for homogeneity of the data or balance of the design.

Finding

The null hypothesis could not be rejected.

Hypothesis 3

Reading improvement is not related to exposure to the experimental or non-specific program.

Test

Mean differences in reading among the three groups of subjects--experimental, non-specific, and control--were tested by a two-way analysis of variance.

There was no statistically significant difference in mean reading ability among the three groups nor as a result of the interaction between the three groups and grade level (Table 6).

Finding

The null hypothesis could not be rejected.

Hypothesis 4

Mathematical improvement is not related to exposure to the experimental or non-specific program.

Test

Mean differences in mathematics among the three groups of subjects--experimental, non-specific, and control--were tested by a two-way analysis of variance.

There was no statistically significant difference in mean mathematical ability among the three groups nor as a result of the interaction between the three groups and grade level (Table 7).

Finding

The null hypothesis could not be rejected.

Hypothesis 5

Intellectual attainment is not related to exposure to the experimental or non-specific program.

Test

Mean differences in intelligence quotient among the three

TABLE 6

Post-test Reading Analyzed by Group and Grade

Grade	Experimental	(No.)	Non-Specific	(No.)	Control	(No.)	Total	(No.)
2	1.9	(2)	---	(0)	2.0	(2)	1.9	(4)
3	2.9	(7)	2.5	(8)	2.6	(8)	2.7	(23)
4	3.5	(14)	3.7	(12)	3.5	(6)	3.6	(32)
5	4.3	(12)	4.2	(11)	4.2	(14)	4.3	(37)
6	5.4	(7)	5.1	(7)	5.3	(7)	5.3	(21)
7	6.3	(4)	6.1	(8)	5.7	(6)	6.0	(18)
8	7.4	(5)	6.4	(5)	6.2	(4)	6.6	(14)
Total	4.4	(51)	4.5	(51)	4.3	(47)		

Analysis of Variance

Source	DF	Sum Sq.	Mean Sq.	F	Probability
Grade	6	0.24412E 05	0.40687E 04	32.50	$p < .01$
Reading	2	0.78430E 02	0.39215E 02	0.31	$p > .25$
Interaction	11	0.34051E 03	0.30956E 02	0.25	$p > .25$
Error	129	0.16151E 05	0.12520E 03		
Total	148	0.40983E 05			

Note: The analysis was not tested for homogeneity of the data or balance of the design.

TABLE 7

Post-test Mathematics Analyzed by Group and Grade

Grade	Experimental	(No.)	Non-Specific	(No.)	Control	(No.)	Total	(No.)
2	2.5	(2)	---	(0)	2.8	(2)	2.6	(4)
3	3.5	(7)	2.8	(8)	2.8	(8)	3.0	(23)
4	3.8	(14)	3.7	(12)	3.6	(6)	3.7	(32)
5	4.8	(12)	4.7	(11)	4.4	(14)	4.6	(37)
6	5.3	(7)	5.4	(7)	5.8	(7)	5.5	(21)
7	6.2	(4)	6.2	(8)	5.9	(6)	6.1	(18)
8	8.4	(5)	8.4	(5)	8.3	(4)	8.4	(14)
Total	4.8	(51)	4.9	(51)	4.7	(47)		

Analysis of Variance

Source	DF	Sum Sq.	Mean Sq.	F	Probability
Grade	6	0.35374E 05	0.58956E 04	46.89	p <.01
Mathematics	2	0.92844E 02	0.46422E 02	0.37	p >.25
Interaction	11	0.44134E 03	0.40122E 02	0.32	p >.25
Error	129	0.16219E 05	0.12573E 03		
Total	148	0.52127E 05			

Note: The analysis was not tested for homogeneity of the data or balance of the design.

groups of subjects--experimental, non-specific, and control--were tested by a two-way analysis of variance.

There was no statistically significant difference in mean intellectual ability among the three groups nor as a result of the interaction between the three groups and grade level (Table 8).

Finding

The null hypothesis could not be rejected.

Limitations

The limitations of this study involve possible threats to valid inferences resulting from the inability of the experimenter to have complete control over the experimental variables (Campbell & Stanley, 1965). The limitations can be identified, but it is difficult to assess the influence, if any, that they have in the findings of this paper.

The findings of the study were based on data obtained for subjects who were selected because of reading problems and the results may be applicable only to similar types of children.

A limitation may inhere in the length it was devoted to the experimental technique. Six weeks may not be a long enough period for the experimental results to be obtained. However, this limitation does not apply to the first two hypotheses based on normative data testing certain relationships posited by the theory.

A limitation may accrue due to the method of analyzing the data. The data were not analyzed for homogeneity nor were the various five designs tested for balance.

A final limitation could have occurred if the effects of the experimental program did not take place until more time had passed after their succession. It might be that had there been follow-up testing six months after the study was completed the results might be slightly different.

TABLE 8

Post-test Intelligence Analyzed by Group and Grade

Grade	Experimental	(No.)	Non-Specific	(No.)	Control	(No.)	Total	(No.)
2	10.0	(2)	---	(0)	9.3	(2)	9.6	(4)
3	9.6	(7)	9.3	(8)	9.4	(8)	9.4	(23)
4	9.7	(14)	9.5	(12)	9.6	(6)	9.6	(32)
5	10.1	(12)	9.5	(11)	9.7	(14)	9.8	(37)
6	9.8	(7)	9.4	(7)	9.7	(7)	9.6	(21)
7	9.1	(4)	9.9	(8)	9.9	(6)	9.7	(18)
8	10.5	(5)	10.6	(5)	10.1	(4)	10.4	(14)
Total	9.8	(51)	9.6	(51)	9.7	(47)		

Analysis of Variance

Source	DF	Sum Sq.	Mean Sq.	F	Probability
Grade	6	0.92445E 03	0.15408E 03	1.57	.25 > p > .10
Group	2	0.11380E 03	0.56898E 02	0.58	p > .25
Interaction	11	0.43500E 03	0.39545E 02	0.40	p > .25
Error	129	0.12663E 05	0.98160E 02		
Total	148	0.14136E 05			

Note: The analysis was not tested for homogeneity of the data or balance of the design.

CHAPTER V

SUMMARY, CONCLUSIONS AND IMPLICATIONS

This chapter summarizes the study and presents the conclusions and implications of the findings.

Summary

Purpose

The purpose of this project was to investigate the influence of a program based on a theory of neurological organization (Delacato, 1959; 1963) and a non-specific program, thought to stimulate the Hawthorne effect, on the intellectual, mathematical, and reading development of retarded readers as well as to test certain relationships deduced from the theory.

Procedures

Three groups of retarded readers, randomly selected from enrollees in a special summer reading course conducted by the Chicago Roman Catholic Archdiocese, were used in the study. The first class, serving as a traditional control group, carried out its normal curriculum. The second class, designated as the experimental group, was subjected to a program described by Delacato (1959; 1963) in addition to its regular curriculum. In order to control for the influence of the Hawthorne effect, a third class, identified as the non-specific group, was subjected to a general program of activities, not known to be correlated with reading achievement, in addition to its normal curriculum.

Subjects in each of the three groups took pre- and post-tests in order to measure their initial creeping skill and their laterality as well as their concluding reading, mathematical and intellectual ability.

Hypotheses

The following five null hypotheses were tested in the investigation (the first two were primarily concerned with testing the theory of neurological organization; the fourth and fifth were primarily concerned with testing the influence of the Hawthorne effect; and the third hypothesis tested both the theory and the Hawthorne effect):

1. Reading is not related to creeping.
2. Reading is not related to laterality.

3. Reading improvement is not related to exposure to the experimental or non-specific program.
4. Mathematical improvement is not related to exposure to the experimental or non-specific program.
5. Intellectual attainment is not related to exposure to the experimental or non-specific program.

Findings

None of the five null hypotheses could be rejected.

Conclusions

As discussed in the previous section, none of the five null hypotheses could be rejected on the basis of data gathered in the study. These findings led to the following conclusions, applicable to the population of retarded readers from which the sample who participated in the study were selected:

1. The data from the study did not support the contention that the addition of the Delacato program to the on-going curriculum of the retarded readers in any way enhanced their reading development.

2. The data did not support the postulated relationship between neurological organization (as measured by creeping and laterality) and reading achievement.

3. The data did not support the contention that the Hawthorne effect operated to produce improvement in reading, mathematics or intelligence through either the experimental or non-specific (placebo) programs.

Implications

Three of the null hypotheses of the study were chosen to test the practical aspects and basic assumptions of the theory of neurological organization. The fact that the theory was not supported by any of the findings casts doubt upon its practicality and validity. Caution should be exercised by anyone considering the adoption of the rationale.

The second of the above mentioned conclusions appears to be the most crucial. Delacato has indicated that neurological organization can be measured by behavioral tasks (in the study creeping and laterality were used) and that reading can also be used as a clinical index of the quality of neurological organization. Since the central concept of the theory, the relationship between neurological organization and reading, has not been supported by the findings, the entire theory is suspect.

The investigator was unable to discover published research reports, other than Delacato's own writings, that support his theory. This lack of research, as well as the fact that the study does not support the theory, suggests that verifiable, empirical evidence from controlled studies, using generally accepted research methods, are needed if advocates of the theory wish to gain acceptance and recognition for the theory from the scientific community.

The findings of hypotheses three, four and five indicated that neither the experimental nor non-specific groups differed in reading achievement from the control group.

The failure of the experimental and non-specific groups to have greater achievement, after the addition of a complex set of experimental conditions, than the control groups suggests that the Hawthorne phenomenon was not operating. Further research is needed to explore the extent to which the Hawthorne phenomenon influences research results.

APPENDIX A

COMMUNICATIONS

Exhibit — Page

I. INITIAL LETTERS TO PARENTS (6/25/65)

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Non-Specific Group 35

II. HOME PROGRAM LETTERS (7/2/65)

Experimental Group

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Page 2: Sidedness and Sleep Position - Right-sided child. 37
Left-sided child 38
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Page 4: Daily Record Chart. 40

Non-specific Group

Page 1: Instructions. 41
Page 2: Sleep Position Illustrated. 42
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III. MEMORANDUM TO TEACHERS REGARDING READING AND WRITING ACTIVITIES (7/8/65) 44

IV. FINAL PARENTS LETTER: POST-TEST SCHEDULE (7/26/65) 45

ARCHDIOCESAN READING SERVICE
ARCHDIOCESE OF CHICAGO
126 NORTH DESPLAINES STREET - CHICAGO 6, ILLINOIS
TELEPHONE CENTRAL 6-5172

AN AGENCY OF THE
CATHOLIC CHARITIES

CO-ORDINATED WITH THE
ARCHDIOCESAN SCHOOL BOARD

June 25, 1965

Dear Parents:

Your child has been selected for a special program during this six-week course in reading. The program involves special physical and coordinative activities which will take place both at home and in school.

In addition to the regularly scheduled reading class, a special activity program has been scheduled from 10:15 AM through 10:45 AM. Those who report to school at 9:00 AM will continue until 10:45 AM. Those who are in the second session should arrive at school at 10:10 AM. They will continue to be dismissed at the regular time. This program will begin tomorrow, Saturday, June 26th.

In connection with the physical activities for this program, your child should have some type of knee pads. These can be made from a couple of pot holders sewn together with some padding between them. The pads can be sewn into the pants or held in place with elastic. Both boys and girls should come to school dressed in these specially prepared trousers.

In addition, your child should have a large towel. He or she will use this towel while resting on the floor.

Next week you will receive a second letter which will explain several activities that should be carried out at home.

We are confident that the encouragement you give to your child in these matters will allow him to receive the full benefits of the special project and the summer reading program.

Sincerely yours,

Sister M. Edwin, S.C.C.

Sister M. Edwin, S.C.C.
Reading Coordinator

Child's name:_____

ARCHDIOCESAN READING SERVICE
ARCHDIOCESE OF CHICAGO
126 NORTH DESPLAINES STREET - CHICAGO 6, ILLINOIS
TELEPHONE CENTRAL 6-8172

AN AGENCY OF THE
CATHOLIC CHARITIES

CO-ORDINATES WITH THE
ARCHDIOCESAN SCHOOL BOARD

June 25, 1965

Dear Parents:

Your child has been selected for a special program during this six-week course in reading. The program involves special physical and coordinative activities which will take place both at home and in school.

In addition to the regularly scheduled reading class, a special activity program has been scheduled from 10:15 AM through 10:45 AM. Those who report to school at 9:00 AM will continue until 10:45 AM. Those who are in the second session should arrive at school at 10:10 AM. They will continue to be dismissed at the regular time. This program will begin tomorrow, Saturday, June 26th.

In connection with the physical activities, your child should wear appropriate clothes. We suggest a pair of overalls for the boys and a pair of durable slacks for the girls. Both boys and girls should wear gym shoes. Your child should come to school dressed in this manner.

In addition, your child should have a large towel. He or she will use this towel while resting on the floor.

Next week you will receive a second letter which will explain several activities that should be carried out at home.

We are confident that the encouragement you give to your child in these matters will allow him to receive the full benefits of the special project and the summer reading program.

Sincerely yours,

Sister M. Edwin, S.C.C.

Sister M. Edwin, S.C.C.
Reading Coordinator

Child's name:_____

ST. JOSEPH and ST. ANNE SCHOOL
2744 West Pershing Road
CHICAGO 32, ILLINOIS

Special Summer Reading Project

July 2, 1965

Dear Parents:

Thank you very much for the cooperation extended to the Special Summer Reading Project. There are a few things we would like your child to do each day, including weekends, at home. So that we might know if these activities are being carried out, we are asking you to keep a Daily Record Chart, which should be returned to school each FRIDAY. Your child will bring home a new Daily Record Chart after school each Friday.

MUSIC (Daily Record Chart, Item 1):-- We would like you to eliminate musical activities completely: this includes listening (radio, television, phonograph, etc.) as well as creating music (singing, whistling, dancing, etc.). Other brothers and sisters should not play records, etc., that can be heard by the child participating in the program.

CREEPING (Daily Record Chart, Item 2):-- Your child should engage in Cross-Pattern Creeping (see Illustration 2) for two 15-minute periods daily. Please note the follo ng:

1. Right hand and left knee move forward and touch the floor together; the head turns toward the right, and the eyes look at the forward hand.
2. On the next step, the left hand and right knee move forward and touch the floor together; the head turns toward the left, and the eyes look at the forward hand.
3. Feet are pointed straight back and are dragged along, remaining in constant contact with the floor; shoes are off.
4. Hands are pointed forward, fingers together, with palms flat on the floor.
5. Knees, hands, and legs all move forward as if on two parallel tracks.

WALKING (Daily Record Chart, Item 3):-- One 15-minute period of Cross-Pattern Walking (see Illustration 3) should be done daily. Please note the following:

1. Right hand and left leg move forward together, with the fingers of the right hand pointing toward the left toes.
2. On the next step, the left hand and the right leg move forward together, with the fingers of the left hand pointing toward the right toes.
3. The upper body is turned slightly from the waist toward the forward foot. The child's head, neck and eyes should rotate toward the forward hand with each step. The child should visually fixate on the forward hand.
4. The legs should move forward in parallel lines with the toes turned out slightly. The activity should be done in bare or stocking feet.
5. The speed of walking should be varied during the session.

SIDEDNESS (Daily Record Chart, Item 4):-- You should encourage your child to use his right hand, leg, and eye throughout the day. You might place a band-aid on his right hand to serve as a reminder. Examples of these activities include the following:

1. Playing kick-ball (right foot).
2. Playing catch (right hand).
3. Silverware placed to the right side of the plate.

SLEEP POSITION (Daily Record Chart, Item 5):-- Your child should lay in the right-handed sleep position (see Illustration 1, below) for 5-10 minutes immediately after he has gone to bed. He will not remain in this or any position for a long time. Therefore, after he has fallen asleep, please put him back into the right-handed sleep position. He will lay in this position twice: 1) upon going to bed; 2) after he has fallen asleep. Please note the following:

1. The child lays on his stomach with his right cheek facing left.
2. His left elbow is bent so that his left hand rests about 6-12 inches from his face, with the palm down.
3. His left leg is bent with his knee opposite his left hip.
4. His right arm is placed down by his side, palm up.
5. His right leg is stretched straight down.
6. The toes of both feet point to the left.

VISUAL ACTIVITIES (Daily Record Chart, Item 6):-- In the not too distant future you will receive instructions on visual activities which should be carried out at home. Leave Item 6 of the Daily Record Chart blank until you receive further instructions.

Very truly yours,

M. Robbins

M. Robbins, Director
Special Summer Reading Project

Illustration 1-- Right Sleep Position

SIDEDNESS (Daily Record Chart, Item 4):-- You should encourage your child to use his left hand, leg, and eye throughout the day. You might place a band-aid on his left hand to serve as a reminder. Examples of these activities include the following:

1. Playing kick-ball (left foot).
2. Playing catch (left hand).
3. Silverware placed to the left side of the plate.

SLEEP POSITION (Daily Record Chart, Item 5):-- Your child should lay in the left-handed sleep position (see Illustration 1, below) for 5-10 minutes immediately after he has gone to bed. He will not remain in this or any position for a long time. Therefore, after he has fallen asleep, please put him back into the left-handed sleep position. He will lay in this position twice: 1) upon going to bed; 2) after he has fallen asleep. Please note the following:

1. The child lays on his stomach with his left cheek facing right.
2. His right elbow is bent so that his right hand rests about 6-12 inches from his face, with the palm down.
3. His right leg is bent with his knee opposite his right hip.
4. His left arm is placed down by his side, palm up.
5. His left leg is stretched straight down.
6. The toes of both feet point to the right.

VISUAL ACTIVITIES (Daily Record Chart, Item 6):-- In the not too distant future you will receive instructions on visual activities which should be carried out at home. Leave Item 6 of the Daily Record Chart blank until you receive further instructions.

Very truly yours,

M. Robbins

M. Robbins, Director
Special Summer Reading Project

Illustration 1-- Left Sleep Position

Illustration 2

Cross-Pattern Creeping

Illustration 3

Cross-Pattern Walking

ST. JOSEPH and ST. ANNE SCHOOL
2744 West Pershing Road
CHICAGO 32, ILLINOIS

DAILY RECORD CHART

Child's Name_____ From Friday, July____through Thursday, July____ Class____ Period____

Please answer the following six questions each day by circling the best answer. Have your child return the Daily Record Chart to his reading teacher every FRIDAY. He will be given a new Chart to bring home after school on Fridays.

ITEM	FRIDAY	SATURDAY	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
1. Did your child refrain from participating in musical activities?	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
2. Did your child engage in two 15-minute periods of Cross-Pattern Creeping?	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
3. Did your child engage in one 15-minute period of Cross-Pattern Walking?	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
4. Did your child engage in sidedness activities?	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
5. Did your child lay in the sleep position: 1) upon going to bed and 2) after he fell asleep?	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
6. Did your child do the reading and writing visual activities?	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No

PLEASE MARK THIS CHART EACH DAY AND HAVE IT RETURNED TO SCHOOL FRIDAY MORNING

ST. JOSEPH and ST. ANNE SCHOOL
2744 West Pershing Road
CHICAGO 32, ILLINOIS

Special Summer Reading Project

July 2, 1965

Dear Parents:

Thank you very much for the cooperation extended to the Special Summer Reading Project. There are a few things we would like your child to do each day, including weekends, at home. So that we might know if these activities are being carried out, we are asking you to keep a Daily Record Chart, which should be returned to school each FRIDAY. Your child will bring home a new Daily Record Chart after school each Friday.

MUSIC (Daily Record Chart, Item 1):-- We would like you to encourage musical activities: this includes listening (radio, television, phonograph, etc.), dancing, and creating music (playing an instrument, singing, whistling, etc.). Encourage other brothers and sisters to involve the child participating in this program in their musical activities.

SPORTS (Daily Record Chart, Item 2):-- Your child should engage in sports for at least two 15-minute periods daily. Examples include the following:

1. Baseball
2. Basketball
3. Swimming
4. Jumping rope

QUIET GAMES (Daily Record Chart, Item 3):-- Your child should spend at least 15 minutes daily playing board games, such as:

1. Checkers
2. Sorry
3. Monopoly
4. Card games

SLEEP POSITION (Daily Record Chart, Item 4):-- Your child should lay in the Special Sleep Position (see explanation and illustration on following page) twice during the night:

1. Upon going to bed.
2. After he has fallen asleep.

VISUAL ACTIVITIES (Daily Record Chart, Item 5):-- In the not too distant future you will receive instructions on visual activities which should be carried out at home. Leave Item 5 of the Daily Record Chart blank until you receive further instructions.

Very truly yours,

M. Robbins

M. Robbins, Director
Special Summer Reading Project

ST. JOSEPH and ST. ANNE SCHOOL
2744 West Pershing Road
CHICAGO 32, ILLINOIS

Special Summer Reading Project

SLEEP POSITION

Your child should lay in the special sleep position for 5-10 minutes immediately after he goes to bed. He will not remain in this or any position for a long time. After he has fallen asleep, please put him back into this position. He will therefore be in this position twice during the night: 1) upon going to bed; 2) after he has fallen asleep. Mark your Daily Record Chart (Item 4) to indicate if this part of the program has been carried out.

NOTE THE FOLLOWING:

1. Child is on his back
2. Head faces the ceiling
3. Legs are straight
4. Arms are folded over his stomach
5. Heels are together
6. Toes are together

ST. JOSEPH and ST. ANNE SCHOOL
2744 West Pershing Road
CHICAGO 32, ILLINOIS

DAILY RECORD CHART

Child's Name_____ From Friday, July____through Thursday, July____ Class____ Period___

Please answer the following five questions each day by circling the best answer. Have your child return the Daily Record Chart to his reading teacher every FRIDAY. He will be given a new Chart to bring home after school on Fridays.

ITEM	FRIDAY	SATURDAY	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
1. Did you encourage your child to participate in musical activities?	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
2. Did your child engage in two 15-minute periods of sports?	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
3. Did your child engage in one 15-minute period of quiet games?	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
4. Did your child lay in the sleep position: 1) upon going to bed and 2) after he fell asleep?	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
5. Did your child do the reading and writing visual activities?	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No

PLEASE MARK THIS CHART EACH DAY AND HAVE IT RETURNED TO SCHOOL FRIDAY MORNING

MEMORANDUM

To: Teachers of classes in Summer Special Reading Project

From: M. Robbins

Re: Reading and Writing Activities
Daily Record Chart

Date: July 8, 1965

1. Each child should have:
   a. manilla folder
   b. special glasses with either red or yellow lenses
   c. red pencil
   d. green cellophane sheet

2. The children should wear the special glasses for all reading and writing activities:
   a. writing should be done with the red pencil only
   b. while reading, the green cellophane should be placed over the material from which the child is reading

3. Remind the children that the Daily Record Charts passed out last week are due tomorrow (Friday)

4. Pass out new Daily Record Charts tomorrow (Friday)

5. Collect the Daily Record Charts tomorrow (Friday) at the beginning of class -- they will be picked up at 10:30 tomorrow

St. Joseph and St. Anne School
2744 West Pershing
Chicago, Illinois

July 26, 1965

Dear Parents:

All children in classes which have been participating in the Special Summer Reading Project will be tested this Thursday and Friday from 9:00 A.M. until 12:00 noon.

Regardless of the usual arrival and departure time of your child, he or she should report to his teacher at 9:00 A.M. and be prepared to remain at school until noon on both Thursday and Friday.

Thank you for your cooperation.

Sincerely,

Melvyn Robbins
Project Director

Child's name_____

APPENDIX B

DATA GATHERING SHEETS

Exhibit		Page
I.	PRE-TEST SHEET	47
II.	DATA SUMMARY SHEETS (3 pages).	48

NAME OF CHILD _____ (last), _____ (first) CLASS ____/____

CREEPING (( ) Sr. M. Viola, ( ) Sr. R. Mary)

1. (__) Good (Cross-Pattern, Coordinated)
   (__) Fair (Cross-Pattern, Uncoordinated).
   (__) Poor (Other forms of Creeping)
   ( ) Comments (Write on back of page)

EYE PREFERENCE (Miss Mary Welch)

Far Point	Left	Right	Mixed	Near Point	Left	Right	Mixed
2. B-Telescope	(__)	(__)	(__)	4. B-3" Tube	(__)	(__)	(__)
3. M-Card/Hole	(__)	(__)	(__)	5. M-Kaleidoscope	(__)	(__)	(__)

( ) Comments (Write on back of page)

HAND AND FOOT PREFERENCE (Miss Susan Fisher)

	Left	Right	Mixed		Left	Right	Mixed
6. Brushing Teeth	(__)	(__)	(__)	9. Eating	(__)	(__)	(__)
7. Using Scissors	(__)	(__)	(__)	10. Write Name	(__)	(__)	(__)
8. Throwing Ball	(__)	(__)	(__)	11. Kick Bean Bag	(__)	(__)	(__)

( ) Comments (Write on back of page)

NEUROLOGICAL TESTS (Mr. Nick Royal)

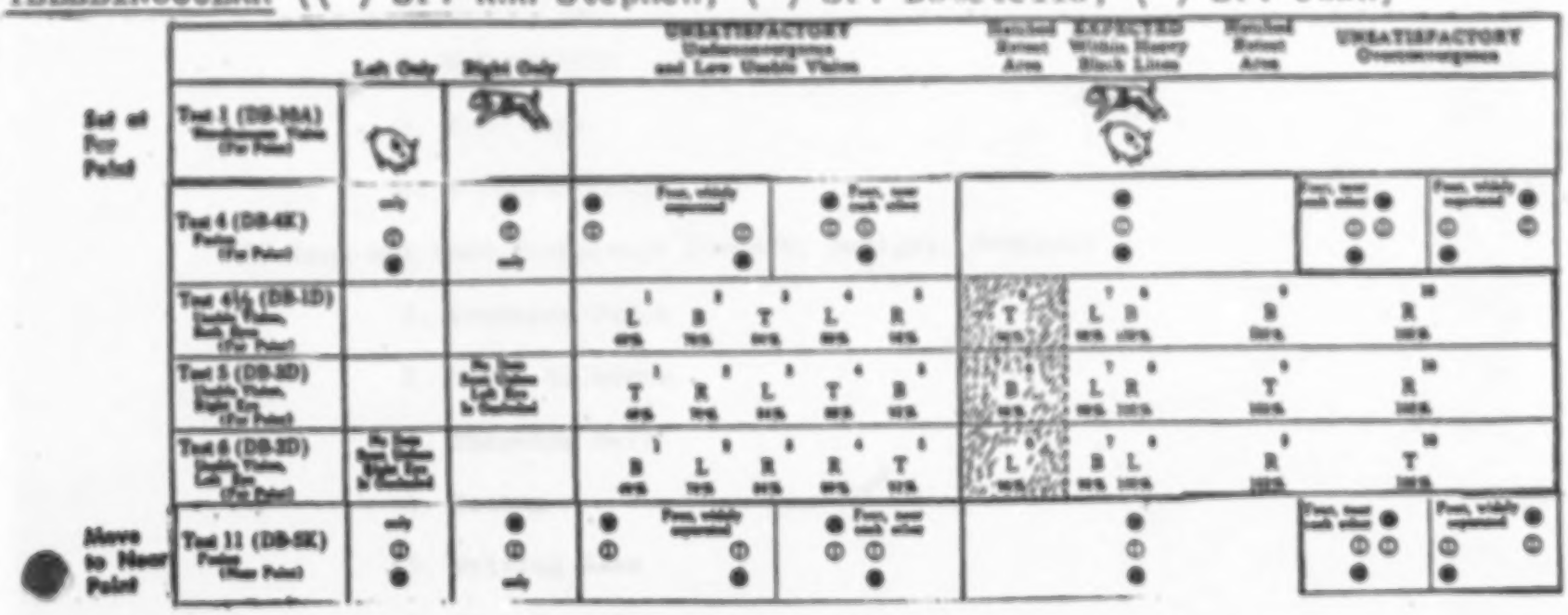
12. Cortical Opposition (__) Good (Circular, Rapid, Simultaneous)
    (__) Fair (Flat/Awkward/Not Quite Simultaneous)
    (__) Poor (Other)

13. Supination
    (__) Good
    (__) Fair
    (__) Poor

14. Pronation
    (__) (Rapid, Simultaneous, No elbow or shoulder movement)
    (__) (Uncoordinated, Slow, Not Quite Simultaneous)
    (__) (Other)

( ) Comments (Write on back of page)

TELEBINOCULAR (( ) Sr. Ann Stephen, ( ) Sr. Dometella, ( ) Sr. Joan)



( ) Comments (Write on back of page)

OPTIONAL TESTS

21. Fusion (__) Good (__) Poor 22. Walking (__) Good (_) Poor

NAME _____ _____
(First) (Last)

SCHOOL _____

I. Identifying Information

A. Class 1)___

B. Session 2)___

C. Number within class 3)___4)___

D. Group 5)___

II. Background Information (from student transfer form)

A. Sex 6)___

B. Age (in months as of July 1, 1965) 7)___8)___9)___

C. Previous grade (64-65 school year) 10)___

D. School attendance 11)___

E. Intelligence Quotient (most recent) 12)___13)___14)___

F. Reading (Spring, 1965 only) Average 15)___16)___17)___

G. Estimated reading level 18)___19)___20)___

III. Neurological and Lateral Tests Results (Administered 6/23-24)

A. Creeping (1=Good; 2=Fair; 3=Poor) 21)___

B. Eye Preference-Sighting (1=Left; 2=Right; 3=Mixed)

1. B-Telescope 22)___

2. M-Card/Hole 23)___

3. B-3" Tube 24)___

4. M-Kaleidoscope 25)___

C. Hand and Foot Preference (1=Left; 2=Right; 3=Mixed)

1. Brushing Teeth 26)___

2. Using Scissors 27)___

3. Throwing Ball 28)___

4. Eating 29)___

5. Writing Name 30)___

6. Kick Bean Bag 31)___

D. Neurological Tests (1=Good; 2=Fair; 3=Poor)

1. Cortical Opposition 32)___

2. Supination 33)___

3. Pronation 34)___

E. Telebinocular

1. Test 1 (1=Satisfactory; 2=Left only; 3=Right only) 35)___

2. Test 4 (1=Expected; 2=Unsatisfactory) 36)___

3. Test 4-1/2 (Highest of last two in a row) 37)___38)___

4. Test 5 (Highest of last two in a row) 39)___40)___

5. Test 6 (Highest of last two in a row) 41)___42)___

6. Test 11 (1=Expected; 2=Unsatisfactory) 43)___

IV. Neurological and Lateral Tests-Summary

A. Neurological Organization (1=Organized; 2=Not organized) 44)___

B. Handedness (1=Left; 2=Right; 3=Mixed) 45)___

C. Eye-Sighting (1=Left; 2=Right; 3=Mixed) 46)___

D. Eye-Telebinocular (1=Left; 2=Right; 3=Mixed) 47)___

E. Eye-Total Preference (1=Left; 2=Right; 3=Mixed) 48)___

F. Eye-Fusion (1=Satisfactory; 2=Unsatisfactory) 49)___

G. Hand and Eye-Sighting (1=Left; 2=Right; 3=Mixed) 50)___

H. Hand and Eye-Telebinocular (1=Left; 2=Right; 3=Mixed) 51)___

I. Hand and Eye-Preference (1=Left; 2=Right; 3=Mixed) 52)___

J. Hand and Eye and Foot (1=Left; 2=Right; 3=Mixed) 53)___

K. Eye-Vision 20/20 (1=Satisfactory; 2=Unsatisfactory) 54)___

V. Post-Test Results

A. Series used (1=Primary I. & Otis As, 2=Primary II. & Otis As, 3=Intermediate I. & Otis B, 4=Intermediate II. & Otis B, 5=Advanced & Otis B.) 55)___

B. Intelligence quotient 56)___57)___58)___

C. Reading average 59)___60)___61)___

D. Arithmetic average 62)___63)___64)___

E. Reading details (none for Advanced.)

1. Word reading/meaning 65)___66)___67)___

2. Paragraph meaning 68)___69)___70)___

F. Arithmetic details (none for Primary I.)

1. Computation 71)___72)___73)___

2. Concepts 74)___75)___76)___

3. Applications (none for Primary II.) 77)___78)___79)___

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F I N I S